

WHAT IS CLAIMED IS:

1. A method for manufacturing a liquid crystal display device, comprising:
providing first and second substrates;

5 forming a main seal pattern on one of the first and second substrates by a screen printing
method;

forming a dummy seal pattern on the same substrate onto which the main seal pattern is
formed, wherein the dummy seal pattern is formed by a selective dispensing method;

dispensing liquid crystal material directly onto one of the first and second substrates;

10 attaching the first and second substrates to each other; and

curing the main seal and dummy seal patterns first and second substrates.

2. The method of claim 1, wherein the main and dummy seal patterns include
sealant material sensitive to UV light and the curing includes irradiating the attached first and
15 second substrates with UV light.

3. The method of claim 2, wherein the sealant material includes monomers
having ends coupled with an acrylic group.

20 4. The method of claim 2, wherein the sealant material includes oligomers having
ends coupled with an acrylic group.

5. The method of claim 2, wherein the sealant material includes monomers
having one end coupled with an acrylic group and the other end coupled with an epoxy group.

6. The method of claim 2, wherein the sealant material includes oligomers having one end coupled with an acrylic group and the other end coupled with an epoxy group.

7. The method of claim 2, further comprising heating the irradiated first and
5 second substrates.

8. The method of claim 1, wherein the curing includes heating the attached first and second substrates.

9. The method of claim 1, further comprising forming column spacers on the second substrate.

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10. The method of claim 9, wherein the column spacers include a photosensitive organic resin.

11. The method of claim 1, further comprising forming the main and dummy seal
15 patterns on the second substrate.

12. The method of claim 1, further comprising dispensing the liquid crystal material directly onto the first substrate.

20 13. The method of claim 1, further comprising forming the main and dummy seal patterns and dispensing the liquid crystal material on the same substrate.

14. The method of claim 1, wherein the forming of the main seal pattern includes:
aligning a mask having a plurality of openings over a region of the one of the first and
25 second substrates corresponding to a plurality of liquid crystal display panels; and

forming sealant material within the plurality of openings.

15. The method of claim 14, wherein the forming the main seal pattern includes:
disposing sealant material onto a predetermined portion of the mask; and

5 forming sealing material within the plurality of openings with a squeegee.

16. The method of claim 1, wherein the forming the main seal pattern includes:
aligning a mask having a single opening over a region of the one of the first and second
substrates corresponding to a liquid crystal display panel;

10 forming sealant material within the single opening aligned over the region;

rearranging the mask over another region of the one of the first and second substrates
corresponding to another liquid crystal display panel; and

forming sealant material within the single opening aligned over the another region.

15 17. The method of claim 16, wherein a plurality of different sized liquid crystal
display panels are disposed within the one of the first and second substrates.

18. The method of claim 16, wherein the forming the main seal pattern includes:
disposing sealant material onto a predetermined portion of the mask; and

20 forming sealing material within the single opening with a squeegee.

19. The method of claim 1, further comprising forming a plurality of alignment
marks on at least one of the first and second substrates.

20. The method of claim 19, wherein at least two alignment marks are formed at corners of at least one of the first and second substrates.

21. The method of claim 20, wherein the at least two alignment marks are formed
5 at diagonally opposite corners of at least one of the first and second substrates.

22. The method of claim 19, wherein the plurality of alignment marks include four alignment marks.

10 23. The method of claim 22, wherein the alignment marks are formed at corners of liquid crystal display panels disposed within the at least one of the first and second substrates.

24. The method of claim 19, wherein at least one of the plurality of alignment marks is provided as a +-shape.

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25. The method of claim 19, wherein at least one of the plurality of alignment marks is provided as a X-shape.

26. The method of claim 19, wherein at least one of the plurality of alignment
20 marks is provided as a rectangular shape.

27. The method of claim 19, wherein at least one of the plurality of alignment marks is provided as a circle shape.

28. The method of claim 1, further comprising forming a third seal pattern at a periphery of the dummy seal pattern.

29. The method of claim 28, further comprising forming the third seal pattern by a selective dispensing method.

30. A method of fabricating a display device, comprising:
providing first and second substrates having;
forming a main seal pattern on one of the first and second substrates by a first process;
10 forming a dummy seal pattern on the one of the first and second substrates by a second process, different than the first process;
providing a layer of liquid crystal material; and
bonding the first and second substrates together, wherein a plurality of liquid crystal display panels are disposed within the bonded first and second substrates, wherein the layer of
15 liquid crystal material is arranged between the bonded first and second substrates.

31. The method according to claim 30, wherein the main seal pattern is formed as a plurality of closed shapes, substantially surrounding each of the plurality of liquid crystal display panels.

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32. The method according to claim 30, wherein the dummy seal pattern is formed as a closed shape, substantially surrounding the main seal pattern.

33. The method according to claim 30, wherein the dummy seal pattern is formed as a plurality sub-patterns having a predetermined shape arranged at corners of the one of the first and second substrates.

5 34. The method according to claim 30, wherein the first process includes a screen printing process.

35. The method according to claim 34, further comprising:
arranging a screen mask over the one of the first and second substrates, wherein the
10 screen mask includes at least one opening, wherein the at least one opening corresponds a
respective liquid crystal display panel disposable within the bonded first and second
substrates;

disposing sealant material on the screen mask; and
forcing the sealant material into the at least one opening.

15 36. The method according to claim 35, wherein the at least one opening includes a single opening.

37. The method according to claim 35, wherein the at least one opening includes a
20 plurality of openings.

38. The method according to claim 35, further comprising:
providing at least two alignment marks; and
aligning the at least one opening of the screen mask with a respective liquid crystal
25 display panel using the at least two alignment marks.

39. The method according to claim 30, wherein the second process includes a selective dispensing process.

40. The method according to claim 30, wherein the providing the layer of liquid
5 crystal material includes selectively dispensing liquid crystal material directly onto one of the first and second substrates.

41. The method according to claim 40, wherein the selectively dispensing liquid
crystal material includes selectively dispensing the liquid crystal material directly onto the one
10 of the first and second substrates.

42. The method according to claim 40, wherein the selectively dispensing liquid
crystal material includes selectively dispensing the liquid crystal material directly onto the
first or second substrate other than the one of the first and second substrates.

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43. The method according to claim 30, wherein the providing the layer of liquid
crystal material includes injecting liquid crystal material between the bonded first and second
substrates.

20 44. The method according to claim 30, wherein the plurality of liquid crystal
display panels are substantially the same size.

45. The method according to claim 30, wherein the plurality of liquid crystal
display panels have different sizes.

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46. The method according to claim 30, further comprising forming a fixation seal pattern at a proximate edges of one of the first and second substrates.

47. The method according to claim 46, wherein the forming the fixation seal pattern includes forming the fixation seal pattern proximate edges of the one of the first and second substrates.

48. The method according to claim 46, wherein the forming the fixation seal pattern includes forming the fixation seal pattern proximate edges of the first or second substrate other than the one of the first and second substrates.

49. The method according to claim 46, wherein the forming the fixation seal pattern includes selectively dispensing sealant material onto one of the first and second substrates.

50. The method according to claim 46, further comprising arranging the fixation seal pattern at a periphery of the dummy seal pattern.

51. The method according to claim 46, further comprising arranging the fixation seal pattern to be substantially collinear with the dummy seal pattern.